

What is claimed is:

1. A computer system comprising:
 - a sending computer including an encoder module encoding an internal representation of a structured document to generate an encoded document; and
 - a receiving computer including a decoder module which receives said encoded document through a network, and decodes said encoded document to reproduce said internal representation,
 - wherein said encoder module lists texts and structures included within said structured document without duplication to thereby generate validation information, and incorporates said validation information into said encoded document; and
 - wherein said decoder module includes a validation module which is responsive to said validation information to validate whether a data structure of said reproduced internal representation is in compliance with a predetermined document type declaration.
2. The computer system according to claim 1, wherein said validation information includes a text content list which lists text contents of

text-including elements described in said
internal representation without duplication,

wherein said document type declaration
includes an element type declaration which
5 defines types of said text-including elements,
and

wherein said validation module validates
whether said text-including elements are in
compliance with said defined types.

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3. The computer system according to claim 1,
wherein said validation information includes an
attribute value list which lists attribute values
of attributes associated with elements described
15 in said internal representation without
duplication,

wherein said document type declaration
includes an attribute type declaration which
defines attribute types of said attributes, and

20 wherein said validation module validates
whether said elements having said attributes are
in compliance with said defined attribute types.

4. The computer system according to claim 1,
25 wherein said validation information includes a
partial structure list which lists partial
structures within said internal representation

without duplication, and

wherein said validation module validates whether said partial structures are in compliance with a syntax defined in said document type
5 declaration.

5. The computer system according to claim 4, wherein said validation information includes:

an element name list which lists element
10 names of elements described in said internal representation,

an attribute name list which lists attribute names of attributes used in said internal representation,

15 an text content list which lists text contents of text-including elements out of said elements described in said internal representation without duplication, and

an attribute value list which lists
20 attribute values of said attributes used in said internal representation,

wherein said partial structures are respectively associated with structure IDs,

wherein said text contents and said
25 attribute values are respectively associated with text IDs in said text content list and said attribute value list,

wherein each of said partial structures is described in said partial structure list using an element ID of an associated parent element described in said internal representation, an
5 attribute ID of an attribute associated with said parent element, an element ID of a child element of said parent element, and a symbol which represents that said parent element have a text content,

10 wherein said encoded document includes a whole structure data describing a whole structure of said internal representation using said structure IDs, and said text IDs, and

 wherein said decoder module reproduces said
15 internal representation using said element name list, said attribute name list, and said whole structure data list.

6. A computer comprising:

20 an encoder module encoding an internal representation of a structured document to generate an encoded document, said encoder module including:

 a validation information validation
25 information extracting module which lists descriptions included within said structured document without duplication to thereby generate

validation information, and

an encoded document output module which incorporates said validation information into said encoded document.

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7. The computer according to claim 6, wherein said validation information includes a text content list which lists text contents of text-including elements described in said internal representation without duplication.

8. The computer according to claim 6, wherein said validation information includes an attribute value list which lists attribute values of attributes associated with elements described in said internal representation without duplication.

9. The computer according to claim 6, wherein said validation information includes a partial structure list which lists partial structures within said internal representation without duplication.

10. The computer according to claim 9, wherein said validation information includes:

an element name list which lists element names of elements described in said internal

representation,

an attribute name list which lists
attribute names of attributes used in said
internal representation, and

5 an text content list which lists text
contents of text-including elements out of said
elements described in said internal
representation without duplication,

an attribute value list which lists
10 attribute values of said attributes used in said
internal representation,

wherein said partial structures are
respectively associated with structure IDs,

wherein said text contents and said
15 attribute values are respectively associated with
text IDs in said text content list and said
attribute value list,

wherein each of said partial structures is
described in said partial structure list using an
20 element ID of an associated parent element
described in said internal representation, an
attribute ID of an attribute associated with said
parent element, an element ID of a child element
of said parent element, and a symbol which
25 represents that said parent element have a text
content,

wherein said encoded document includes a

whole structure data describing a whole structure of said internal representation using said structure IDs, and said text IDs, and

wherein said decoder module reproduces said
5 internal representation using said element name list, said attribute name list, and said whole structure data list.

11. A computer comprising:

10 a decoder module which receives and decodes an encoded document including validation information in which texts and structures included within said structured document are listed without duplication,

15 wherein said decoder module includes:

a validation module which is responsive to said validation information to validate whether a data structure of an internal representation to be reproduced from said encoded
20 document is in compliance with a predetermined document type declaration; and

an internal representation output module which reproduces said internal representation from said encoded document.

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12. The computer according to claim 11, wherein said validation information validation includes a

text content list which lists text contents of
text-including elements described in said
internal representation without duplication,

wherein said document type declaration
5 includes an element type declaration which
defines types of said text-including elements,
and

wherein said validation module validates
whether said text-including elements are in
10 compliance with said defined types.

13. The computer according to claim 11, wherein
said validation information includes an attribute
value list which lists attribute values of
15 attributes associated with elements described in
said internal representation without duplication,

wherein said document type declaration
includes an attribute type declaration which
defines attribute types of said attributes, and
20 wherein said validation module validates
whether said elements having said attributes are
in compliance with said defined attribute types.

14. The computer according to claim 11, wherein
25 said validation information includes a partial
structure list which lists partial structures
within said internal representation without

duplication, and

wherein said validation module validates whether said partial structures are in compliance with a syntax defined in said document type
5 declaration.

15. The computer according to claim 14, wherein said validation information includes:

an element name list which lists element
10 names of elements described in said internal representation,

an attribute name list which lists attribute names of attributes used in said internal representation,

15 an text content list which lists text contents of text-including elements out of said elements described in said internal representation without duplication, and

an attribute value list which lists
20 attribute values of said attributes used in said internal representation,

wherein said partial structures are respectively associated with structure IDs,

wherein said text contents and said
25 attribute values are respectively associated with text IDs in said text content list and said attribute value list,

wherein each of said partial structures is described in said partial structure list using an element ID of an associated parent element described in said internal representation, an
5 attribute ID of an attribute associated with said parent element, an element ID of a child element of said parent element, and a symbol which represents that said parent element have a text content,

10 wherein said encoded document includes a whole structure data describing a whole structure of said internal representation using said structure IDs, and said text IDs, and

wherein said decoder module reproduces said
15 internal representation using said element name list, said attribute name list, and said whole structure data list.

16. A method for transmitting a structured
20 document comprising:

encoding an internal representation of said structured document to generate an encoded document;

receiving said encoded document through a
25 network; and

decoding said encoded document to reproduces said internal representation,

wherein said encoding includes:

listing texts and structures of said structured document without duplication to generate validation information; and

5 incorporating said validation information into said encoded document, and

wherein said decoding includes:

validating based on said validation information whether said internal representation
10 to be reproduced is in compliance with a predetermined document type declaration.

17. A computer program comprising:

listing texts and structures of a
15 structured document without duplication to generate validation information; and

encoding an internal representation of said structured document to generate an encoded document, wherein said encoded document includes
20 said validation information.

18. A computer program comprising:

decoding an encoded document received from a network, said encoded document including
25 validation information in which texts and structures of a structured document are listed without duplication,

wherein said decoding includes:

validating based on said validation
information whether an internal representation of
said structured document to be reproduced is in
5 compliance with a predetermined document type
declaration, and
reproducing said internal representation
from said encoded document.